

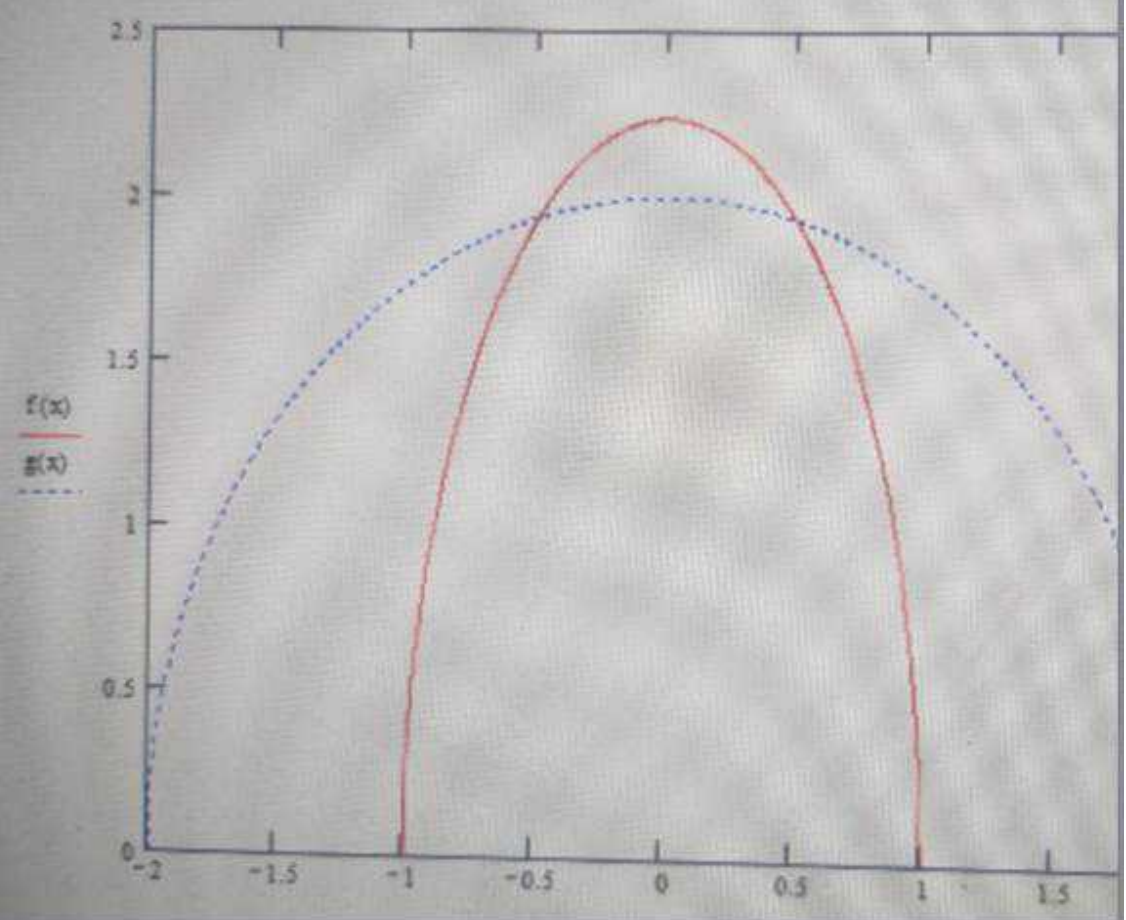
MathCAD Professional (32-bit) [Untitled1.MCD]

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Constants Times New Roman 10 B I U

$$g(x) = \sqrt{4 - x^2}$$

$$f(x) = \sqrt{5 - x^2}$$



Angle of intersection  
 $5x^2 + y^2 = 5$   
 $x^2 + y^2 = 4$   
 Subtracting

$$4x^2 = 1$$

$$x^2 = \frac{1}{4}$$

$$x = \frac{1}{2}$$

Sub  $x$  in Eq (1)

$$5\left(\frac{1}{2}\right)^2 + y^2 = 5$$

$$\left(\frac{5}{4}\right) + y^2 = 5$$

$$y^2 = 4\frac{1}{4}$$

$$y = \sqrt{4\frac{1}{4}}$$

$$y = 1.9365$$

Coordinates of Point of Intersection  
 $(x, y) = \left(\frac{1}{2}, \sqrt{\frac{9}{4}}\right) = (0.5, 1.9365)$

To plot the graph, we make  $y$  the subject of formula for both Eq

$$5x^2 + y^2 = 5$$

$$y^2 = 5 - 5x^2$$

$$y = \sqrt{5 - 5x^2}$$

$$x^2 + y^2 = 4$$

$$y^2 = 4 - x^2$$

$$y = \sqrt{4 - x^2}$$

Angle of Intersection

Angle 1 (A1)

$$5x^2 + y^2 = 5$$

$$10x + 2y \frac{dy}{dx} = 0$$

$$\frac{2y \frac{dy}{dx}}{2y} = \frac{-10x}{2y}$$

$$\frac{dy}{dx} = \frac{-5x}{y}$$

$$\text{Slo. of } \text{circ. } y$$

$$\frac{dy}{dx} = \frac{-x}{y} = \frac{-\left(\frac{1}{2}\right)}{\left(\sqrt{\frac{9}{4}}\right)} = -1.237$$

$$\frac{dy}{dx} = \frac{-5x}{y}$$

$$\text{Slo. of } \text{circle} = -1.237$$

$$\theta_1 = \tan^{-1}(-1.237) = -52.36^\circ$$

Angle 2 (A2)

$$x^2 + y^2 = 4$$

$$2x + 2y \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = \frac{-x}{y}$$

$$\frac{dy}{dx} = -\frac{x}{y}$$

Sub  $x$  and  $y$

$$\frac{dy}{dx} = \frac{-1}{2} = \frac{-\sqrt{3}}{2}$$

$$= -\frac{1}{2} \times \frac{2\sqrt{3}}{2} = \frac{-\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$

$$= -\frac{\sqrt{3}}{2} = -0.866$$

$$\frac{dy}{dx} = \frac{-x}{y}$$

$$\text{Slo. of } \text{circle} = -0.866$$

$$\theta_2 = \tan^{-1}(-0.866)$$

$$= -41.41^\circ$$

$$\therefore \theta = \theta_2 - \theta_1$$

$$= -41.41^\circ - (-52.36^\circ)$$

$$= 10.95^\circ$$